

### **REMARKS**

Upon entry of the amendments in this paper, claims 1-9, 13-14, 18-19, 20-22, and 24 will be pending in the above-identified application, with claims 1-8 being withdrawn. Claims 9, 14, 19 and 24 are herein amended. Claims 10-12, 15-17, and 20-22 are herein canceled. No new matter is entered.

It is respectfully submitted that this paper is fully responsive to the Office action mailed on September 13, 2010. (Please note that Applicants have resubmitted the amendments presented in the November 15<sup>th</sup> response to the September 13<sup>th</sup> Office Action.)

### **Claim Rejections – 35 U.S.C. §112**

Claims 9-24 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Applicants respectfully disagree with the Examiner's position. However, to expedite prosecution and clarify the subject matter of the presently claimed invention, Applicants herein delete "a normal mode of operation" from each independent claim.

Accordingly, Applicants request favorable reconsideration of the above rejection.

### **Claim Rejections – 35 U.S.C. §103**

Claims 9-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Applicants' disclosed prior art ("APA").

Applicants disagree with the Examiner's characterization of the APA and previously presented claim language. However, to expedite prosecution and clarify the presently claimed invention, Applicant herein amend claims 9, 14, 19, and 24 and cancel claims 10-12, 15-17, and 20-22. In view of these amendments and the following remarks, Applicants request favorable reconsideration of pending claims 9, 13-14, 18-19, and 23-24.

The Examiner stated in the outstanding Office Action: "The prior art does not teach the setting value to have a power different from a center value of the predetermined intensity variable range (prior art sets the value at P\_cent, fig. 2 S13) alluding to adjustability of the power intensity. Further, the Examiner stated: "It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the automatic power control (APC) setting value to be a value other than the central power value as a matter of engineering choice, which would allow for values of increased, or decreased, power to be used during varied operating conditions to provide clear output signals." Applicants respectfully disagree with the Examiner.

First, the Examiner fails to present evidence to show that a person of "ordinary skill in the art at the time of invention" would have been motivated to modify the APA in the above-manner.

For example, the specification describes: "The controlling ability required in a wavelength locker module has been one point of power (or power intensity) with respect to a single-wavelength laser diode (hereinafter referred to simply as "LD"). Also, a fixed standard margin (power margin) has been set on the power recently, since multi-wave tuning became

necessary." *See* page 1, lines 29-35. In other words, it is required that only the center value of the predetermined intensity variable range is defined for one wavelength.

Further, the specification describes: "However, even if the controlling point is not located within the temperature variable range, the function  $\lambda\_CONST$  for maintaining the target wavelength  $\lambda\_targ$  may cross the region in which the power variable range and the temperature variable range overlap each other. In this case, the LD module is still considered to be defective, resulting in a low LD module yield." *See* page 7, lines 18-24. That is, those skilled in the art did not have any idea of using an arbitrary value other than the center value of the predetermined intensity variable range.

Second, Applicants disagree with the Examiner's assertion that it would be obvious to one of ordinary skill in the art at the time of the invention to adjust the APC setting value as a matter of engineering design choice because it would "provide clear output signals." What is meant by "clear output signals?" Plus, how is it determined whether output signals are clear or not? What is the relation between "increased or decreased power" and "clear output signals." Applicants submit that the Examiner fails to present evidence that shows motivation to adjust the automatic power control (APC) setting value to be a value other than the central power value in the applicant's admitted prior art.

As pointed out above, Applicants herein amend claims 9, 14, 19 and 24 to more clearly define the invention. These amended claims relate to the laser module being able to vary wavelengths and specifies units, steps and instructions in detail. For example, the APA does not describe or suggest "shortest wavelength relational expression defining unit" and "longest

wavelength relational expression defining unit". Fig. 2 of the present application fails to disclose or suggest these units. Also, the combination of Fig. 2 with Figs. 3A and 3B does not result in the above units. Similarly, the above combination does not result in "power intensity upper limit value calculating/defining unit" and "power intensity lower limit value calculating/defining unit".

Lastly, it appears that the Examiner is improperly relying on knowledge obtained from Figs. 4A and 4B in order to characterize and interpret Figs. 3A and 3B. As previously explained, a person of ordinary skill in the art merely understands from Fig. 3B that the device having the characteristic shown in Fig. 3B is defective.

In view of the aforementioned amendments and remarks, Applicants submit that pending claims 9, 13-14, 18-19, and 23-24 are not obvious in view of the APA.

**Additional Comments Re: Advisory Action Remarks**

Applicants disagree with the Examiner's reliance on newly cite reference, U52007/0211778, and explanation regarding the APC.

Applicants disagree with the Examiner's reliance on the '778 reference, in part because the reference does not describe how the test mentioned is actually implemented.

The reference merely shows well-known APC and improvements in the assembly of SE laser installed in the optical transmission system in order to maximize the function of APC in the optical transmission system. Whereas, the presently claimed invention, for example, does not characterize APC but merely utilizes the function of APC in testing the laser modules.

Specifically, the reference relates to an art of forming a loop of APC in a laser assembly that employs surface-emitting lasers (SELS). Conventionally, part of laser light emitted from the surface of SEL is applied to the APC loop. This APC loop needs a complicated feedback system composed of a light-receiving element, a splitter, and a lens, and degrades the emission efficiency. A proposed art uses light leaked from the backside of SEL and maintains good emission efficiency. A pn junction is formed by diffusing p-type impurities in an n-type silicon substrate, and is used as a light-receiving element. The SEL is fixed just above the pn junction. The pn junction receives laser light from the backside of the SEL, and a resultant current is fed back to a control circuitry. Thus, the power of laser light emitted from the surface of the SEL can be maintained at a predetermined value. The reference intends to avoid power variation of laser light due to temperature change after the laser assembly is installed in a system such as Blu-ray, DVD or CD.

However, the reference does not describe any test of semiconductor lasers prior to installation to the system, but describe the general APC and an application to SEL.

Whereas, the presently invention defined in each independent claim extracts an optimum temperature setting range that is a continuous part of the predetermined temperature variable range, and an optimum power intensity setting range that is a continuous part of the predetermined power intensity variable range. Our invention generates the setting value based on both the optimum temperature setting range and the optimum power intensity setting range.

More specifically, the setting value is based on the optimum power intensity and the optimum temperature for each predetermined wavelength. The supplier of the laser modules informs the user of the setting value generated for each laser module.

For example, in the AAPA, if an output other than the center P\_Cont is set at step S13, some laser modules may operate at the predetermined wavelength and within the predetermined temperature variable range. However, the AAPA does not evaluate whether the output other than the center P\_Cont is optimal or not.

Accordingly, for at least the reasons discussed above, Applicants request favorable reconsideration of pending claims 1-9, 13-14, 18-19, 20-22, and 24.

### **Conclusion**

In view of the aforementioned amendments and remarks, Applicants submit that the pending claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview.

Application No. 10/614,277  
Art Unit: 2828

Response under 37 C.F.R. §1.114  
Attorney Docket No. 030824

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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